E72-10236
CR-129113

LAND USE MAPPING AND MODELLING FOR THE PHOENIX QUADRANGLE

John L. Place
Geographic Applications Program
U.S. Geological Survey
Washington, D.C. 20242

1 November 1972

Type I Progress Report for Period 1 September to 31 October 1972

(E72-10236) LAND USE MAPPING AND MODELLING FOR THE PHOENIX QUADRANGLE Progress Report, 1 Sep. - 31 Oct. 1972 J.L. Place (Geological Survey) 1 Nov. 1972 4 p CSCL 08B G3/13

N73-12336

Unclas 00236

Prepared for:

Goddard Space Flight Center
Greenbelt, Maryland 20771

Publication authorized by the Director, U.S. Geological Survey

Type I Progress Report

ERTS-1

1 September 1972 - 31 October 1972

a. Land Use Mapping and Modelling for the Phoenix Quadrangle. (ERTS-A Proposal SR-186)

b. IN-057

c. Statement and explanation of any impedance:

Positive transparencies of color infrared composites were an absolute necessity before the investigation could be conducted effectively. This requirement was stated in the original proposal. Once the black and white transparencies of MSS bands 4, 5, and 6 arrived around October 1, much time was spent in trying to prepare color composite transparencies from them. We can use an I^2S Color Additive Viewer for several hours each week. Copies of color transparencies are being ordered retroactively from NASA Goddard by Special order form. No MSS Band 7 images have yet been received. No cloud-free sets (MSS 4, 5, and 6) have yet been received showing most of the Phoenix (Arizona) Quadrangle test site in one view, although partial sets have been received.

d. Accomplishments during the reporting period and those planned for the next period:

Complete coverage for the Phoenix Quadrangle has been obtained in MSS bands 5 and 6, and in some place band 4 as well. Investigation has commenced using an I^2S Color Additive Viewer when available and other magnifying equipment at other times. A map of changes in land use has been compiled for the entire quadrangle using ERTS images as

the only source information. No aircraft photos were consulted. During the next two months, the black and white 9 x 9" transparencies will be tested on other image enhancing equipment, e.g., color or density slicing. If a color infrared composite can be obtained as a hard copy transparency, additional experimentation will be formed with this. If MSS band 7 or any RBV bands or 70 mm ERTS images of any kind can be obtained, these to will be tested as aids to mapping changes in land use. In general, the MSS bands 4, 5, and 6 in color composite have been satisfactory for descriminating cropland from either rangeland or urbanized areas in Arizona. In the expanding urban fringe of Phoenix, this is a significant accomplishment. Aircraft photographs will eventually be used to check the accuracy of the interpretations from ERTS imagery.

e. Scientific results and practical applications:

Experimentation with 70mm squares cut from ERTS 9.5 inch MSS positive transparencies (bands 4, 5, and 6) in an I^2S color additive viewer, A Richardson Film Production Viewer at 10 X Magnification and in microfische viewers at 12X and 18X magnification has indicated that band 5 photography provides the most useful interpretable data. In the I^2S viewer high intensities of blue and red light in bands 4 and 6 respectively enhance faint vegetation patterns not easily detectable. Slides produced from 35mm color transparencies made by photographing the I^2S viewing screen are suitable visual aids for use during presentation. Interpretation of MSS transparencies allowed compilation of a map of land use change in the Phoenix Quadrangle. (Category 2H, Land Use Survey and Mapping, General)

f. Published reports or talks::

NONE

g. Recommendations for improvement:

It would be advantageous to send out all four bands of ERTS MSS to those principal investigators requiring color infrared composites for their work. Although the 9 X 9" transparencies definitely are useful, some distribution of the 70mm images might help also in allowing a broad overview in the Color Additive Viewers.